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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/599,876	07/12/2007	Mark Vanderbeken	2414-103	5939

32084 7590 02/12/2009

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EXAMINER	
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ART UNIT	PAPER NUMBER
4177	
MAIL DATE	DELIVERY MODE
02/12/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/599,876	VANDERBEKEN, MARK	
	Examiner	Art Unit	
	MOHAMMAD YUSUF	4177	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 July 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 October 2006* is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *10/15/2007*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 3 and 8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 3 recites the limitation "chair". However, Examiner does not understand the meets and bounds of the term "chair". A chair does not have a universally accepted structure and could have many different kinds of shape, such as a reclining chair, bean bag chair etc.

Claim 8 recites the limitation "first bend forms an angle of between 45 and 135 degrees". Claim 8 is depended on claim 3 which recites "first bend is an "L" bend". It unclear how this claim further limits claim 3 as this claim now requires a bend angle range of 45 degrees or 135 degrees. A bend angle of (for example) 45 degree should more appropriately be characterized to have a V-shaped bend rather than an L-shaped bend.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-6, 8-14, 16-19 and 21-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lipp (US 3,863,479), in view of Bachhofer (DE 19939180; and DERWENT English Abstract).

As to **claim 1**, Lipp discloses:

A method for manufacturing a circular metal tank (Lipp, abstract, "A machine for producing a large diameter tube from strip sheet metal material comprises a frame"), comprising:

a) providing an elongated sheet of metal (Lipp, column 1, line 5, "from a sheet-metal strip coiled on a feed reel");

b) bending said sheet of metal along an upper longitudinal edge thereof to produce a first bend (Lipp, Figs. 8-13, upper edge is bent to produce first bend);

c) bending said sheet of metal along a lower longitudinal edge thereof to produce a second bend (Lipp, Figs. 8-13, lower edge is also bent to produce second bend);

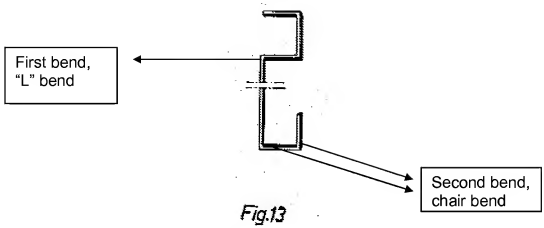
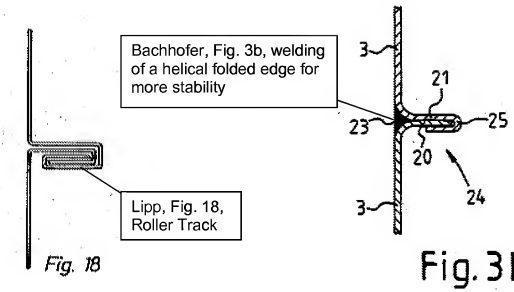


Fig.13

d) moving said sheet of metal in a helical trajectory such that said second bend comes into proximity above said first bend (Lipp, column 1, lines 25-27, "supporting rollers carried by the frame and disposed on a helix at a distance from the bottom end of the frame". In Fig. 20, Lipp discloses that the helically situated rollers 7 support the sheet metal strip moving up helically and as the metal strip moves helically, the first bend comes in contact with second bend. Also see Fig. 6, which shows the sheet metal strip being supported by rollers 7. Also see Figs. 14, which shows the second bend comes into proximately above the first bend);

Lipp **fails** to disclose:

e) welding said second bend to said first bend to form a wall of said tank, said wall having a continuous helical weld; Lipp only teaches a continuous helical wall where the edges are folded (Lipp, Fig. 18).



However, Bachhofer discloses (DE19939180 DERWENT Abstract, title, lines 7-10) a cylinder container tank formed by sheet strip and the sheet strip is spirally formed where the edges are bent out at the butt line to be welded together. Bachhofer also discloses (Fig. 3a and Fig. 3b) that the welding (Fig. 3b) is done to the joint after the edges are folded (Fig. 3a) together. Bachhofer explains that the welding is done to provide stability (English Abstract, title, lines 7-10). It would have been obvious for one having ordinary skill in the art at the time the invention was made to further weld the folded joint (Lipp, Fig. 18), as suggested by Bachhofer (Bachhofer, Fig. 3b) in order to provide more stability to the joints (shown in figure 18 above) in a circular metal tank of Lipp.

wherein said first and second bends cooperate to form a helical roller track on an outside of said tank (Lipp, Fig. 18, first and second bend is folded to provide a roller track that rests on support rollers 7 in Fig. 20); and

wherein said tank is supported on a plurality of rollers (Lipp, Fig. 20, support rollers 7 engage the roller track of Fig. 18) that engage said roller track;

and wherein said tank is rotated about its longitudinal axis on said rollers (Lipp, column 6, lines 46-51, "... supporting rollers ... supporting the tube at a fold therein, said helical path and said tube supported thereon having substantially vertical longitudinal axes" Here said 'fold' is shown in Fig. 18 above, 'supporting rollers' 7 are shown in Figs. 1 and 20) such that said tank moves upwards as said sheet of metal is welded to bottom thereof (Lipp, column 1, line 16, "... produced from the ground up").

As to **claim 2**, Lipp discloses:

wherein said elongated sheet of metal is a coiled sheet of metal which is decoiled prior to said bending steps (Lipp, column 1, line 5, "from a sheet-metal strip coiled on a feed reel"; also see Fig. 1, reel 83 that holds the coiled metal sheet).

As to **claim 3**, Lipp discloses:

wherein said first bend is an "L" bend and said second bend is a chair bend (Lipp, Fig. 13, the first bend on the top edge is an "L" bend and first two bends at the bottom edge is the second bend is a chair bend).

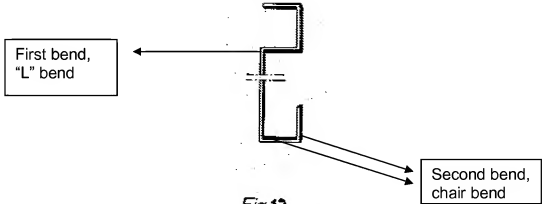


Fig.13

As for **claim 4**, Lipp discloses:

wherein said metal sheet is corrugated before it said welding step (According to *Random House Dictionary, © Random House, Inc. 2006*, corrugate means "to draw or bend into folds". Lipp discloses that the metal sheet is first corrugated or bent into folds before welding; column 5, line 66 – column 6, line 3, "The strip path within the profiling station 15 is so devised that the edges of the strip are bent as shown in FIGS. 8 to 13 while the part of the strip situated therebetween is at the same time bent according to the diameter of the tube under production.")

As to **claim 5**, Lipp discloses:

wherein prior to said welding step adjacent portions of said first and second bends are gross positioned and then fine positioned (Lipp, Figs. 14-18, before welding, the first and second bends are first gross positioned and then folded into fine positioned).

As to **claim 6**, Lipp discloses:

wherein at least one of said rollers is motorized (Lipp, Column 8, lines 12-14, "at least one supporting roller is provided with a drive comprising a steplessly variable drive motor") and said tank and said metal sheet are moved by means of said motorized roller (column 2, lines 6-10, "To assist the profiling and folding station drive motors, at least one of the supporting rollers may be provided with a drive comprising an infinitely controllable motor, so that there may be more than two motors to raise the silo helically").

As to **claim 8**, Lipp discloses:

wherein said first bend forms an angle of between 45 and 135 degrees with a body of said metal sheet (Lipp, Fig. 13, the first bend on the top edge is an "L" bend. "L" forms an angle of 90 degrees).

As to **claim 9**, Lipp discloses:

wherein said first bend has a width of 5 mm to 100 mm (Lipp, Fig. 19 and column 6, lines 33-39, discloses in the graph of Fig. 19 that all the bends (which includes first and second bends as explained above) in Figs. 13 and 18 are in the range between 10mm-50mm).

As to **claim 10**, Lipp discloses:

wherein a width of a horizontal portion of said second bend is between 5 mm to 100 mm (Lipp, Fig. 19 and column 6, lines 33-39, discloses in the graph of Fig. 19 that all the bends (which includes first and second bends as explained above) in Figs. 13 and 18 are in the range between 10mm-50mm).

As to **claim 11**, Lipp discloses:

wherein a width of a vertical portion of said second bend is between 5 mm to 150 mm (Lipp, Fig. 19 and column 6, lines 33-39, discloses in the graph of Fig. 19 that all the bends (which includes first and second bends as explained above) in Figs. 13 and 18 are in the range between 10mm-50mm).

As to **claim 12**, Modified Lipp discloses:

wherein a top of said tank is cut so as to create an upper circumferential edge which is parallel to the ground (Bachhofer, Fig. 1, where the top of the tank is cut to parallel to the ground).

As to **claim 13**, Lipp discloses:

wherein a bottom of the tank is cut during operation to create a lower circumferential edge which is parallel to the ground (Lipp, column 6, lines 25-26, "As soon as this has been reached, the tube is cut off level at the bottom").

As to **claim 14**, Lipp discloses:

A system for manufacturing a circular metal tank (Lipp, abstract, "A machine for producing a large diameter tube from strip sheet metal material comprises a frame"), comprising:

(a) a decoiler for decoiling a coiled sheet of metal (Lipp, claim 14, reel winch for unwinding the sheet metal strip from reel 83, "a reel winch is provided for unwinding the feed reel");

(b) a bender/corrugator for introducing a first bend along an upper longitudinal edge of said metal sheet and a second bend along a second longitudinal edge of said metal sheet (Lipp, Figs. 1 and 2, profiling station 15. Also, column 3, lines 17-20, "The rollers of the profiling station 15 are so constructed and disposed that the side edges of a sheet-metal strip are bent as shown in FIGS. 8 - 13.");

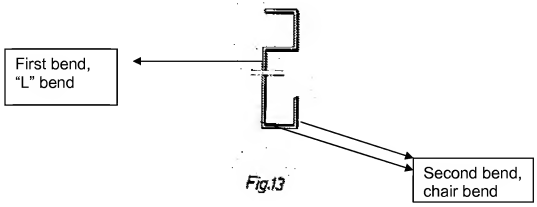


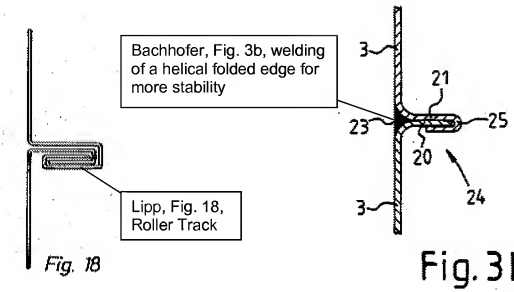
Fig.13

(c) a support system having rollers, for moving said metal sheet along a helical trajectory, supporting said tank and for rotating said tank about its longitudinal axis as said metal sheet is added to a bottom edge of said tank (Lipp, column 1, lines 25-27, "supporting rollers carried by the frame and disposed on a helix at a distance from the bottom end of the frame". In Fig. 20, Lipp discloses that the helically situated rollers 7 support the sheet metal strip moving up helically and as the metal strip moves helically, the first bend comes in contact with second bend. Also see Fig. 6, which shows the sheet metal strip being supported by rollers 7. Also see Figs. 14-18, which show the first bend in contact with second bend);

(d) a welding positioner for positioning said second bend proximate and above said first bend (Lipp, Figs. 1 and 4, folding station 53 is taken to be welding positioner. Also see column 4, lines 48-49, "The folded joints shown in FIGS. 14 - 18 are produced at the folding station 53." The sheet metal edges are first bent, Figs. 8-13, and then the bends are folded, figs. 14-18, in order to position second bend in proximate and above first bend);

Lipp **fails** to disclose:

(e) a welder for welding said first and second bends together to form a circular wall of said tank; Lipp only teaches a continuous helical wall where the edges are folded (Lipp, Fig. 18).



However, Bachhofer discloses (DE19939180 DERWENT Abstract, title, lines 7-10) a cylinder container tank formed by sheet strip and the sheet strip is spirally formed where the edges are bent out at the butt line to be welded together. Bachhofer also discloses (Fig. 3a and Fig. 3b) that the welding (Fig. 3b) is done to the joint after the edges are folded (Fig. 3a) together. Bachhofer explains that the welding is done to provide stability (English Abstract, title, lines 7-10). It would have been obvious for one having ordinary skill in the art at the time the invention was made to further weld the folded joint (Lipp, Fig. 18), as suggested by Bachhofer (Bachhofer, Fig. 3b) in order to provide more stability to the joints (shown in figure 18 above) in a circular metal tank of Lipp.

wherein said first and second bends cooperate to form a helical roller track on an outside of said tank (Lipp, Fig. 18, first and second bend is folded to provide a roller track that rests on support rollers 7 in Fig. 20);

and wherein said tank is supported on said rollers that engage said roller track (Lipp, Fig. 20, support rollers 7 engage the roller track of Fig. 18).

As to **claim 16**, Lipp discloses:

further comprising a welding pre-aligner for gross positioning said first and second bends before said first and second bends are positioned by said welding positioner (Lipp, Figs. 14-18, before welding, the first and second bends are first gross positioned and then folded into fine position by folding station 53 of Fig. 4. Thus folding station is taken to be a welding pre-aligner).

As to **claim 17**, Lipp discloses:

wherein said first bend is an "L" bend and said second bend is a chair bend (Lipp, Fig. 13, the first bend on the top edge is an "L" bend and first two bends at the bottom edge is the second bend is a chair bend).

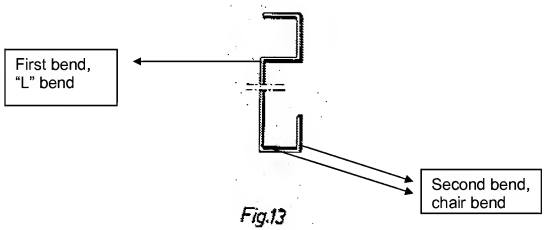


Fig.13

As to **claim 18**, Lipp discloses:

wherein said bender/corrugator additionally corrugates said metal sheet (According to *Random House Dictionary, © Random House, Inc. 2006*, corrugate means "to draw or bend into folds". Lipp discloses that the metal sheet is first corrugated or bent into folds before welding; column 5, line 66 – column 6, line 3, "The

strip path within the profiling station 15 is so devised that the edges of the strip are bent as shown in FIGS. 8 to 13 while the part of the strip situated therebetween is at the same time bent according to the diameter of the tube under production.")

As to **claim 19**, Lipp discloses:

wherein at least one of said rollers is motorized (Lipp, Column 8, lines 12-14, "at least one supporting roller is provided with a drive comprising a steplessly variable drive motor") and said tank and said metal sheet are moved by means of said motorized roller (column 2, lines 6-10, "To assist the profiling and folding station drive motors, at least one of the supporting rollers may be provided with a drive comprising an infinitely controllable motor, so that there may be more than two motors to raise the silo helically").

As to **claim 21**, Lipp discloses:

wherein said first bend forms an angle of between 45 and 135 degrees with a body of said metal sheet (Lipp, Fig. 13, the first bend on the top edge is an "L" bend. "L" forms an angle of 90 degrees).

As to **claim 22**, Lipp discloses:

wherein said first bend has a width of 5 mm to 100 mm (Lipp, Fig. 19 and column 6, lines 33-39, discloses in the graph of Fig. 19 that all the bends (which includes first and second bends as explained above) in Figs. 13 and 18 are in the range between 10mm-50mm).

As to **claim 23**, Lipp discloses:

wherein a width of a horizontal portion of said second bend is between 5 mm to 100 mm (Lipp, Fig. 19 and column 6, lines 33-39, discloses in the graph of Fig. 19 that all the bends (which includes first and second bends as explained above) in Figs. 13 and 18 are in the range between 10mm-50mm).

As to **claim 24**, Lipp discloses:

wherein a width of a vertical portion of said second bend is between 5 mm to 150 mm (Lipp, Fig. 19 and column 6, lines 33-39, discloses in the graph of Fig. 19 that all the bends (which includes first and second bends as explained above) in Figs. 13 and 18 are in the range between 10mm-50mm).

As to **claim 25**, Modified Lipp discloses:

further comprising means for cutting a top of said tank so as to create an upper circumferential edge which is parallel to the ground (Bachhofer, Fig. 1, where the top of the tank is cut to parallel to the ground. Thus there is a mean for cutting the top of a tank. In any event, it would have been obvious for one having ordinary skill in the art at the time the invention was to incorporate a mean to cut the top part, otherwise the tank will indefinitely move up helically.)

As to **claim 26**, Lipp discloses:

further comprising means for cutting a bottom of the tank to create a lower circumferential edge which is parallel to the ground (Lipp, column 6, lines 25-26, "As soon as this has been reached, the tube is cut off level at the bottom". Thus there is a mean for cutting the bottom of a tank.)

5. Claims 7 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lipp (US 3,863,479), in view of Bachhofer (DE 19939180) as applied to claim 1 (for claims 7) or to claim 14 (for claim 20) above, and further in view of McFatter (US 4,121,747).

As to **claims 7 and 20**, Modified Lipp **fails** to disclose:

wherein said metal sheet is made of one of aluminum, galvanized steel, stainless steel, carbon steel. Modified Lipp does not disclose what kind of metal strip is used for welding in the manufacturing of the metal tank. However McFatter discloses a storage tank construction procedure, where the coiled strip metal is a strip steel (McFatter, column 2, lines 43-44, "... typically strip steel...") and the tank is constructed helically where the upper and lower edges are welded. It would have been obvious for one having ordinary skill in the art at the time the invention was made to use a steel strip in manufacturing a modified circular metal tank of Lipp as such is an art recognized metallic sheet for making a welded helical tank as exemplified in the teachings of McFatter.

6. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lipp (US 3,863,479), in view of Bachhofer (DE 19939180) as applied to claim 1 above, and further in view of Kelly (US 3,838,496).

As to **claim 15**, Modified Lipp **fails** to disclose:

The system according to claim 14, further comprising a vertical coil seam welder for butt-welding an end of a first coiled metal sheet to an end of a second coiled metal sheet before said metal sheet pass through said bender/corrugator.

However, Kelly discloses a welding apparatus and method for welding an elongated seam between adjacent meal plates. Kelly teaches, column 3, lines 59-62, "[t]he welding apparatus 10 is a vertical seam welder useful in the erection of storage tank sheels and the apparatus is illustrated in its operative position on such a tank shell." Vertical seam welder 10 is illustrated in Kelly's Fig. 1. It would have been obvious for one having ordinary skill in the art at the time the invention was made to incorporate Kelly's vertical seam welder in Lipp's apparatus, before the sheet metal enters the profiling station 15 (taken to be bender/corrugator) where the edges of the sheet metal is bent, because this would provide Lipp's apparatus a continuous feed of sheet metal by vertically seam welding end of a sheet metal strip with a new sheet metal as suggested by Kelly.

7. Claims 1-6, 8-11, 13-14, 16-19, 21-24 and 26 are rejected again under 35 U.S.C. 103(a) as being unpatentable over Lipp (US 3,863,479), in view of Johnston (US 6,000,261).

As to **claim 1,** Lipp discloses:

A method for manufacturing a circular metal tank (Lipp, abstract, "A machine for producing a large diameter tube from strip sheet metal material comprises a frame"), comprising:

a) providing an elongated sheet of metal (Lipp, column 1, line 5, "from a sheet-metal strip coiled on a feed reel");

b) bending said sheet of metal along an upper longitudinal edge thereof to produce a first bend (Lipp, Figs. 8-13, upper edge is bent to produce first bend);

c) bending said sheet of metal along a lower longitudinal edge thereof to produce a second bend (Lipp, Figs. 8-13, lower edge is also bent to produce second bend);

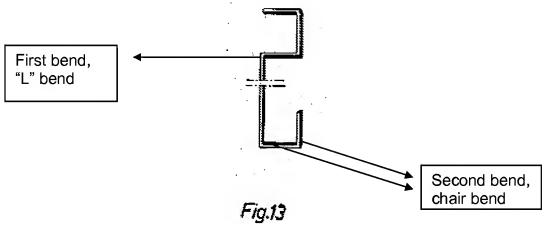


Fig.13

d) moving said sheet of metal in a helical trajectory such that said second bend comes into proximity above said first bend (Lipp, column 1, lines 25-27, "supporting rollers carried by the frame and disposed on a helix at a distance from the bottom end of the frame". In Fig. 20, Lipp discloses that the helically situated rollers 7 support the sheet metal strip moving up helically and as the metal strip moves helically, the first bend comes in contact with second bend. Also see Fig. 6, which shows the sheet metal strip being supported by rollers 7. Also see Figs. 14, which shows the second bend comes into proximately above the first bend);

Lipp **fails** to disclose:

e) welding said second bend to said first bend to form a wall of said tank, said wall having a continuous helical weld; Lipp only teaches a continuous helical wall where the edges are folded to make roller track (Lipp, Fig. 18).

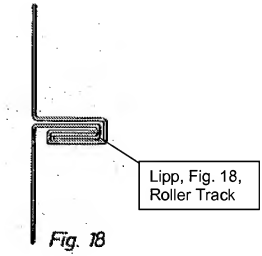


Fig. 18

However, Johnston discloses a method and apparatus for spiral or helical pipe manufacturing. He teaches, in column 1, lines 36-37, "Spiral pipe forming assemblies use lockseaming, welding or both to join material edges." Thus, it would have been obvious for one having ordinary skill in the art at the time the invention was made to weld the bent joints instead of folding to join the sheet metal edges and to make roller track, because welding and folding are functional equivalent techniques for joining adjacent metallic sheet edges in manufacturing metallic helical tanks, as exemplified with the finding of Johnston.

wherein said first and second bends cooperate to form a helical roller track on an outside of said tank (Lipp, Fig. 18, first and second bend is folded to provide a roller track that rests on support rollers 7 in Fig. 20); and

wherein said tank is supported on a plurality of rollers (Lipp, Fig. 20, support rollers 7 engage the roller track of Fig. 18) that engage said roller track;

and wherein said tank is rotated about its longitudinal axis on said rollers (Lipp, column 6, lines 46-51, "... supporting rollers ... supporting the tube at a fold therein, said helical path and said tube supported thereon having substantially vertical longitudinal axes" Here said 'fold' is shown in Fig. 18 above, 'supporting rollers' 7 are shown in Figs. 1 and 20) such that said tank moves upwards as said sheet of metal is welded to bottom thereof (Lipp, column 1, line 16, "... produced from the ground up").

As to **claim 14**, Lipp discloses:

A system for manufacturing a circular metal tank (Lipp, abstract, "A machine for producing a large diameter tube from strip sheet metal material comprises a frame"), comprising:

(a) a decoiler for decoiling a coiled sheet of metal (Lipp, claim 14, reel winch for unwinding the sheet metal strip from reel 83, "a reel winch is provided for unwinding the feed reel");

(b) a bender/corrugator for introducing a first bend along an upper longitudinal edge of said metal sheet and a second bend along a second longitudinal edge of said metal sheet (Lipp, Figs. 1 and 2, profiling station 15. Also, column 3, lines 17-20, "The rollers of the profiling station 15 are so constructed and disposed that the side edges of a sheet-metal strip are bent as shown in FIGS. 8 - 13.");

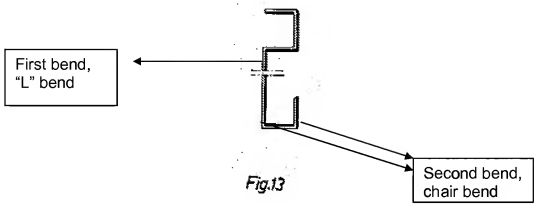


Fig.13

(c) a support system having rollers, for moving said metal sheet along a helical trajectory, supporting said tank and for rotating said tank about its longitudinal axis as said metal sheet is added to a bottom edge of said tank (Lipp, column 1, lines 25-27, "supporting rollers carried by the frame and disposed on a helix at a distance from the bottom end of the frame". In Fig. 20, Lipp discloses that the helically situated rollers 7 support the sheet metal strip moving up helically and as the metal strip moves helically, the first bend comes in contact with second bend. Also see Fig. 6, which shows the sheet metal strip being supported by rollers 7. Also see Figs. 14-18, which show the first bend in contact with second bend);

(d) a welding positioner for positioning said second bend proximate and above said first bend (Lipp, Figs. 1 and 4, folding station 53 is taken to be welding positioner. Also see column 4, lines 48-49, "The folded joints shown in FIGS. 14 - 18 are produced at the folding station 53." The sheet metal edges are first bent, Figs. 8-13, and then the bends are folded, figs. 14-18, in order to position second bend in proximate and above first bend);

Lipp **fails** to disclose:

(e) a welder for welding said first and second bends together to form a circular wall of said tank; Lipp only teaches a continuous helical wall where the edges are bent and then folded to make a roller track (Lipp, Fig. 18).

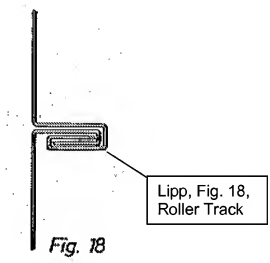


Fig. 18

However, Johnston discloses a method and apparatus for spiral or helical pipe manufacturing. He teaches, in column 1, lines 36-37, "Spiral pipe forming assemblies use lockseaming, welding or both to join material edges." Thus, it would have been obvious for one having ordinary skill in the art at the time the invention was made to weld the bent joints instead of folding, because welding and folding are functional equivalent techniques for joining adjacent metallic sheet edges in manufacturing metallic helical tanks, as exemplified with the finding of Johnston.

wherein said first and second bends cooperate to form a helical roller track on an outside of said tank (Lipp, Fig. 18, first and second bend is folded to provide a roller track that rests on support rollers 7 in Fig. 20);

and wherein said tank is supported on said rollers that engage said roller track

(Lipp, Fig. 20, support rollers 7 engage the roller track of Fig. 18).

As for Claims 2-6, 8-11, 13, 16-19, 21-24 and 26, for essentially the same line of reasoning set forth in numbered paragraph 4 above, these claims would have been obvious in the art.

8. Claims 7 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lipp (US 3,863,479), in view of Johnston (US 6,000,261) as applied to claim 1 (for claims 7) or to claim 14 (for claim 20) above, and further in view of McFatter (US 4,121,747).

These claims would have been obvious in the art for essentially the same reasons set forth in numbered paragraph 5 above.

9. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lipp (US 3,863,479), in view of Johnston (US 6,000,261) as applied to claim 1 above, and further in view of Kelly (US 3,838,496).

This claim would have been obvious in the art for essentially the same reasons set forth in numbered paragraph 6 above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MOHAMMAD YUSUF whose telephone number is (571)270-7487. The examiner can normally be reached on Monday-Friday 8:00AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sam Yao can be reached on 571-272-1224. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/MY/

/Sam Chuan C. Yao/
Supervisory Patent Examiner, Art Unit 4111